This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.07 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating the permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1.	Facility Name and Mailing Address:	Presidential Lakes, Sec. 14 STP	SIC Code :	4952 WWTP
	Facility Location:	Carter Lane King George, VA 22485	County:	King George
	Facility Contact Name:	Brad Campbell	Telephone Number:	(804) 749-8868
	Facility E-mail Address:	BACampbell@aquaamerica.com		
2.	Permit No.:	VA0086720	Expiration Date of previous permit:	9/19/2015
	Other VPDES Permits associated with this facility:		VAN020109 (Nutrient Trading GP)	
	Other Permits associated with this facility:		None	
	E2/E3/E4 Status:	NA		
3.	Owner Name:	Aqua Presidential, Inc.		
	Owner Contact/Title:	Luther Ghorley	Telephone Number:	(804) 240-9650
	Owner E-mail Address:	LSGhorley@aquaamerica.com		
4.	Application Complete Date:	3/23/2015		
	Permit Drafted By:	Anna Westernik	Date Drafted:	8/4/2015
	Draft Permit Reviewed By:	Doug Frasier	Date Reviewed:	8/10/2015
	WPM Review By:	Alison Thompson	Date Reviewed:	8/17/2015
	Public Comment Period :	Start Date: 10/21/2015	End Date:	11/20/2015

5. Receiving Waters Information: See **Attachment 1** for the Flow Frequency Determination.

Receiving Stream Name :	Popcastle Creek	Stream Code:	3-POP
Drainage Area at Outfall:	0.3 square miles	River Mile:	3-POP002.7
Stream Basin:	Rapphannock	Subbasin:	Rapphannock
Section:	4	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-E21R
7Q10 Low Flow:	0.0 MGD	7Q10 High Flow:	0.0 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.0 MGD
30Q10 Low Flow:	0.0 MGD	30Q10 High Flow:	0.0 MGD
Harmonic Mean Flow:	0.0 MGD	30Q5 Flow:	0.0 MGD

*With a drainage area of 0.3 square miles, it can be assumed that all critical flows are 0.0 MGD. The reference gaging station at Piscataway Creek in Maryland (#01653600) has a drainage area of 39.5 square miles. Therefore, with a low drainage area ratio (0.0076 cfs), it can be assume that all high flow data is also 0.0 MGD.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

X	State Water Control Law	X	EPA Guidelines
X	Clean Water Act	X	Water Quality Standards
X	VPDES Permit Regulation		Other (PES, Occoquan Policy, Dulles)
X	EPA NPDES Regulation	X	9VAC25-40 (Nutrient Regulation)

7. Licensed Operator Requirements: Class III

8. Reliability Class: Class I

9. Permit Characterization:

X	Private	X	Effluent Limited		Possible Interstate Effect
	Federal	X	Water Quality Limited		Compliance Schedule Required
	State		Whole Effluent Toxicity Program Required		Interim Limits in Permit
	POTW		Pretreatment Program Required	X	Interim Limits in Other Document (July 2014 Consent Order)
X	TMDL	X	e-DMR Participant		

10. Wastewater Sources and Treatment Description:

This sewage treatment plant processes wastewater from approximately 300 single family dwellings (a total of approximately 900 people).

The facility is equipped with a mechanical screen to protect downstream pumps and equipment. After primary treatment, the wastewater is then directed to the equalization basin. The basin equalizes flow so that the subsequent treatment units can be fed at a uniform rate and blends various waste contaminants to ensure a uniform feed concentration to the biological system. Following equalization, the forward flow is then directed to the sequencing batch reactor (SBR) biological treatment processes. The SBR system acts as an aeration basin and clarifier within a single reactor.

Aluminum sulfate (alum) will be metered into the SBR system to chemically remove reactive phosphorus. Supplemental alkalinity (sodium carbonate) will be fed to the SBR system on a flow proportional basis. Acetic acid can also be added to the SBR system, during the "React Fill" or "React Phases" as an additional carbon source for denitrification and to the dentrification filters. All chemical feed systems can be manually adjusted to control the rate of feed.

A post equalization basin is present after the SBR units. Denitrification filters and ultra violet (UV) disinfection are located after the post equalization basin.

Outfall 001 discharges below a pond into Popcastle Creek, located in the Rappahannock River Watershed.

A CTO for the 0.07 MGD facility was issued on September 18, 2015 (**Attachment 2**).

See **Attachment 3** for a facility schematic/diagram.

Table 1 – Outfall Description				
Outfall Number	**Discharge Sources**	**Treatment**	**Design Flow(s)**	**Outfall Latitude/Longitude**
001	Domestic Wastewater from a Residential Subdivision	See Item 10 above.	0.07 MGD	38° 17' 26" N 77° 14' 47" W
See **Attachment 4** for Topographic Map 181C (King George)				

11. Sludge Treatment and Disposal Methods:

All wasted sludge is transported to the Massaponax WWTP (VA0025658) for composting at the Livingston Landfill in Spotsylvania County.

12. Discharges in Waterbody VAN-E21R:

Table 2 – Permitted Dischargers in Waterbody VAN-E21R			
Permit Number	**Facility Name**	**Type**	**Receiving Stream**
VA0086789	Oakland Park Sewage Treatment Plant	Municipal Discharge Individual Permits	Muddy Creek, UT
VA0032034	Fort A.P. Hill Wilcox Camp WWTP		Mill Creek, UT
VA0089125	Haymount Wastewater Treatment Facility		Rappahannock River
VA0087645	Birchwood Power Facility	Stormwater Industrial Discharge Individual Permits	Rappahannock River
VA0088374	Crop Production Services, Inc.		Birchwood Run, UT
VAR051005	Virginia Used Truck Parts	Stormwater Industrial Discharge General Permits	Muddy Creek, UT
VAR051414	King George Landfill and Recycling Center		Birchwood Run Birchwood Run, UT
VAG406380	Hall Residence	Domestic Discharge ≤ 1,000 GPD General Permits	White Oak Run
VAG406050	Logan Apartments		White Oak Run, UT
VAG406436	Odell Residence		White Oak Run, UT
VAG840195	Aggregate Industries MAR – Hayfield Sand and Gravel	Non Metallic Mineral Mining General Permit	Rappahannock River Rappahannock River, UT
VAG840227	Rappahannock Farms Sand and Gravel Facility		Rappahannock River
VAG750219	Central Vehicle Wash Facility Fort AP Hill	Car Wash General Permit	Mill Creek, UT

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	**Volume Stored**	**Spill/Stormwater Prevention Measures**
Acetic Acid	220 gallons (4 55-gal. drums)	*
Caustic Soda	220 gallons (4 55-gal. drums)	*
Magnesium Hydroxide	220 gallons (4 55-gal. drums)	*
Delpac 2000	220 gallons (4 55-gal. drums)	*

* All chemicals are contained within a building that has a concrete floor and drains that lead back to the head of the wastewater treatment plant.

14. Site Inspection:

Performed by Anna Westernik on March 30, 2015 (see **Attachment 5**).

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

This facility discharges to Popcastle Creek, which has not been monitored or assessed. Lambs Creek is located approximately 2.7 miles downstream from Outfall 001. DEQ ambient monitoring station 3-LAM000.57 is located on Lambs Creek, approximately 2.7 miles downstream from Outfall 001. The following is the water quality summary for this segment of Lambs Creek, as taken from the 2012 Integrated Report:

Class III, Section 4.

DEQ monitoring stations located on this segment of Lambs Creek:

- Ambient Water Quality Monitoring Station 3-LAM000.57 located at Route 3.

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for the Tidal Freshwater Rappahannock River. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use was not assessed.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4 – 2012 Downstream Impairment Information							
Waterbody Name	**Impaired Use**	**Cause**	**Distance From Outfall**	**TMDL completed**	**WLA**	**Basis for WLA**	**TMDL Schedule**
Impairment Information in the 2012 Integrated Report							
Lambs Creek	Recreation	*E. coli*	2.7 miles	Tidal Freshwater Rappahannock River Bacteria 05/05/2008	1.22E+11 cfu/year E. coli	126 cfu/100 ml *E. coli* --- 0.07 MGD	---
Rappahannock River*	Fish Consumption	PCBs	3.3 miles	---	---	---	2016

* The Rappahannock River is also listed with dissolved oxygen (D.O.) impairment for the aquatic life and open water aquatic life uses in the 2014 Integrated Report, which is currently in draft format and under review by EPA. It is expected that this segment of the Rappahannock River will be listed for the aquatic life and open water aquatic life uses in the final 2014 Integrated Report. The D.O. impairment will be covered by the completed TMDL for the Chesapeake Bay watershed; however, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the draft 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins as well as by major source categories (wastewater, urban storm water, onsite/septic agriculture, air deposition). Section 17.e of this fact sheet provides additional information on specific nutrient limitations for this facility to implement the provisions of the Chesapeake Bay TMDL.

The full planning statement is found in **Attachment 6**.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Popcastle Creek, is located within Section 4 of the Rappahannock River Basin and is a Class III water.

Class III waters must achieve a dissolved oxygen (D.O.) level of 4.0 mg/L or greater, a daily average D.O. level of 5.0 mg/L or greater, and a temperature that does not exceed 32°C at all times and maintain a pH of 6.0-9.0 standard units (S.U.).

1) pH and Temperature for Ammonia Criteria:

The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. Since the effluent may have an impact on the instream values, the temperature and pH values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile temperature and pH values are used because they best represent the critical conditions of the receiving stream.

Since the critical stream flows are 0.0 MGD, effluent data would normally be used to calculate the 90th percentile temperature and pH values. However, since the treatment works is being replaced with a plant having dissimliar treatment capabilities, default temperature values of 25°C (low flow period) and 15° C (high flow period) and a default pH value of 8.0 S.U. were the assumed 90th percentile temperature and pH values used to calculate the ammonia water quality criteria. The ammonia water quality standards calculations are shown in **Attachment 7.**

2) Total Hardness for Hardness-Dependent Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream and/or effluent total hardness values (expressed as mg/L calcium carbonate).

There is no hardness data for this facility. Staff guidance suggests utilizing a default hardness value of 50 mg/L $CaCO_3$ for streams east of the Blue Ridge. The hardness-dependent metals criteria in **Attachment 7** are based on this default value.

3) Bacteria Criteria:

The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

E. coli bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean*
Freshwater *E. coli* (N/100 ml)	126

*For a minimum of four weekly samples taken during any calendar month.

The Freshwater Water Quality/Wasteload Allocation Analysis (**Attachment 7**) also details other water quality criteria applicable to the receiving stream.

d. Receiving Stream Special Standards
The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Popcastle Creek, is located within Section 4 of the Rappahannock River Basin. This section has not been designated with a special standard.

16. Antidegradation (9VAC25-260-30):
All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an evaluation of the critical stream flows. The drainage area above the discharge point is 0.3 square miles; the 7Q10 is 0.0 MGD. During both critical flow and high flow periods, the design flow discharge volume from the sewage treatment plant is much greater than the flow in the stream. It is staff's best professional opinion that the instream waste concentration is almost 100% during critical stream flows, and the water quality of the stream will mirror the quality of the effluent. Permit limits proposed in this reissuance have been established by determining wasteload allocations that will result in attaining and/or maintaining all water quality criteria applicable to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. Since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a. Effluent Screening:
Effluent data was not reviewed for this permit reissuance because the treatment plant has been replaced. This measurable change in treatment capability will change the nature of the pollutant discharge.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent. Since this is a sewage treatment plant, a wasteload allocation (WLA) analysis for ammonia is required. UV disinfection is being used; therefore, total residual chlorine will not be evaluated.

b. Mixing Zones and Wasteload Allocations (WLAs):
Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{Co\,[\,Qe + (\,f\,)(Qs\,)\,] - [\,(\,Cs\,)(\,f\,)(\,Qs\,)\,]}{Qe}$$

Where:
- WLA = Wasteload allocation
- Co = In-stream water quality criteria
- Qe = Design flow
- Qs = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- Cs = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the Co.

c. Effluent Limitations Toxic Pollutants, Outfall 001:
9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:
The default effluent pH is the same as that used previously to derive ammonia criteria and subsequent limits. Therefore, the current monthly average and weekly average ammonia limit of 1.8 mg/L and 2.6 mg/L shall remain in the permit at this time throughout the year (see **Attachment 8).**

The Environmental Protection Agency (EPA) finalized new, more stringent ammonia criteria in August 2013; possibly resulting in significant reductions in ammonia effluent limitations. It is staff's best professional judgment that incorporation of these criteria into the Virginia Water Quality Standards is forthcoming. This facility and others may be required to comply with new criteria in this permit term or during their next permit term.

2) Metals/Organics
It is staff's best professional judgment that given the wastewater sources; limitations are not warranted at this time.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants
No changes to D.O., biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), and pH limitations are proposed.

The stream modeling conducted in October 1996 (**Attachment 9**) proposed permit limits for BOD_5 (14 mg/L), Total Kjeldahl Nitrogen (TKN) (4.2 mg/L), and D.O. (6.0 mg/L). This permit reissuance and the 2010 permit reissuance has the following limits: BOD_5 – 14 mg/L monthly average concentration, Ammonia as N – 1.8 mg/L monthly average concentration; and D.O. -- 6.0 mg/L minimum. These limits are in agreement with the 1996 Stream Model. A monthly average ammonia limit of 1.8 mg/L ensures compliance with the proposed TKN limit of 4.2 mg/L derived by the stream model since it is generally accepted that TKN consists of approximately 60% ammonia in raw wastewater.

It is staff's practice to equate the TSS limits with the BOD_5 limits. TSS limits are established to equal BOD_5 limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set to meet the water quality criteria.

E. coli limitations are established in accordance with the Water Quality Standards at 9VAC25-260-170.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients
VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal technology. The basis for the concentration limits is 9VAC25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed,* which requires new or expanding discharges with design flows of ≥0.04 MGD to treat for Total Nitrogen (TN) and Total Phosphorus (TP) to either BNR (Biological Nutrient Removal) levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA (State of the Art) levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

This facility has also obtained coverage under 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit. This facility has coverage under this General Permit; the permit number is VAN020109. Allowable TN and TP Annual Loads from this facility are found in the Registration List dated January 1, 2012 (9VAC25-820-70). See **Attachment 10** for an excerpt from the Registration List.

Monitoring for Nitrates + Nitrites, TKN, TN, and TP are included in this permit. The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are at the frequencies set forth in 9VAC25-820. Annual average effluent limitations and monthly and year to date calculations for TN and TP are included in this individual permit. The annual averages are based on 9VAC25-820-70 (Registration List) and the conditions that were present at the permitted design capacity of 0.035 MGD as defined in §62.1-44.19. See the baseline nutrient loading summary below.

TN = 18.7 mg/L x 0.035 MGD x 8.3438 x 365 days = 1993 lbs/yr
TP = 2.5 mg/L x 0.035 MGD x 8.3438 x 365 days = 266 lbs/yr

At the 0.07 MGD design flow tier the following nutrient concentrations shall be incorporated in the permit based upon the baseline nutrient loading:

1993 lbs TN/yr = 9.4 mg/L x 0.07 MGD x 8.3438 x 365 days
266 lbs TP/yr = 1.2 mg/L x 0.07 MGD x 8.3438 x 365 days

f. Effluent Limitations and Monitoring Summary:
The effluent limitations are presented in the following table. Limits were established for BOD_5, TSS, Ammonia as N, pH, D.O., *E. coli*, TN, and TP. This permit also requires monitoring for TKN and Nitrate+Nitrite.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD/CBOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:
All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

The Design flow is 0.07 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the permit's expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	1	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
BOD_5 [a]	1, 2	14 mg/L 3.7 kg/day	21 mg/L 5.6 kg/day	NA	NA	1/W	4H-C
Total Suspended Solids (TSS) [a, b]	3	14 mg/L 3.7 kg/day	21 mg/L 5.6 kg/day	NA	NA	1/W	4H-C
Dissolved Oxygen (DO)	1, 2	NA	NA	6.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	5	NL mg/L	NA	NA	NA	1/M	4H-C
Ammonia, as N (mg/L)	1, 2	1.8 mg/L	2.6 mg/L	NA	NA	1/W	4H-C
E. coli (Geometric Mean) [c]	1, 4	126 n/100 mL	NA	NA	NA	2D/W	Grab
Nitrate+Nitrite, as N [d]	5	NL mg/L	NA	NA	NA	1/M	4H-C
Total Nitrogen [d, e]	5	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen – Year to Date [d]	5	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year [d]	5	9.4 mg/L	NA	NA	NA	1/Y	Calculated
Total Phosphorus [d]	5	NL mg/L	NA	NA	NA	1/M	4H-C
Total Phosphorus – Year to Date [d]	5	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year [d]	5	1.2 mg/L	NA	NA	NA	1/Y	Calculated

The basis for the limitations codes are:

1. Water Quality Standards
2. Stream Model (**Attachment 9**)
3. Best Professional Judgment
4. TMDL for Lamb's Creek
5. 9VAC25-40 (Nutrient Regulation)

MGD= Million gallons per day.
NA= Not applicable.
NL= No limit; monitor and report.
TIRE= Totalizing, indicating and recording equipment.
S.U.= Standard units.

1/D= Once every day.
1/W= Once every week.
1/M= Once every month.
2D/W= Two days every week.
1/Y= Once every year.

4H-C= A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 4-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of four (4) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of four (4) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab= An individual sample collected over a period of time not to exceed 15 minutes.

a. At least 85% removal for BOD_5 and TSS shall be attained for this effluent.
b. TSS shall be expressed as two significant figures.
c. Samples shall be collected between 10:00 a.m. and 4:00 p.m.
d. See Part I.B.3. of the permit for nutrient reporting calculations. The calendar year annual averages for Total Nitrogen and Total Phosphorus are effective January 1st of the year after issuance of the CTO for the new facility.
e. Total Nitrogen is the sum of Total Kjeldahl Nitrogen and NO_2+NO_3 Nitrogen and shall be calculated from the results of those tests.

20. Other Permit Requirements:

a. Part I.B. of the permit contains quantification levels and compliance reporting instructions. 9VAC25-31-190.L.4.c requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

21. Other Special Conditions:

a. **95% Capacity Reopener.** The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. The facility is a PVOTW.

b. **Indirect Dischargers.** Required by the VPDES Permit Regulation at 9VAC25-31-200 B.1 and B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

c. **O&M Manual Requirement.** Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d. **CTC, CTO Requirement.** The Code of Virginia at § 62.1-44.19 and the Sewage Collection and Treatment Regulations at 9VAC25-790 require that all wastewater treatment works obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

e. **Licensed Operator Requirement.** The Code of Virginia at §54.1-2300 et seq., the VPDES Permit Regulation at 9VAC25-31-200 C, and the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations at 18VAC160-20-10 et seq. requires licensure of operators. This facility requires a Class III operator.

f. **Reliability Class.** The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a Reliability Class of I.

g. **Sludge Reopener.** The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the Clean Water Act (CWA).

h. **Sludge Use and Disposal.** The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720 and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works for domestic sewage.

i. **Nutrient Offsets**. The Virginia General Assembly, in their 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. §62.1-44.19:15

sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.

j. **E3/E4.** 9VAC25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

k. **Nutrient Reopener.** 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

l. **TMDL Reopener.** This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

22. Permit Section Part II.

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a. Special Conditions:
- The Treatment Works Closure Plan has been removed due to an increase in design flow above 0.04 MGD.

b. Monitoring and Effluent Limitations:
- Total Residual Chlorine Limits have been removed because UV disinfection is being used.
- The monitoring frequency for BOD_5, TSS, ammonia, TKN, NO_3 and NO_3, and Total Phosphorus has been changed from 8-HC to 4-HC in accordance with DEQ Guidance.

c. Other
- Due to the construction of the 0.07 MGD sewage treatment plant (CTO issued on September 18, 2015), the 0.045 MGD Design Flow Tier has been removed from this permit.

24. Variances/Alternate Limits or Conditions: None

25. Public Notice Information:

First Public Notice Date: 10/21/2015 Second Public Notice Date: 10/28/2015

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3837, anna.westernik@deq.virginia.gov. See **Attachment 11** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will

be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:

a. **Previous Board Action(s):** Presidential Service Company, Tier II, Inc. entered into a Consent Order with DEQ on September 27, 2012. The Schedule of Compliance in the Consent Order included: a proposal to upgrade and expand the existing sewage treatment plant, the submission of monthly progress reports to DEQ regarding the upgrade and expansion of the sewage treatment plant, and the requirement to operate and maintain the facility in a workmanlike manner to ensure the best quality of effluent discharged. Additionally, the Consent Order had interim limits for ammonia. This order was terminated on July 16, 2014.

Aqua Presidential entered into a Consent Order with DEQ on July 7, 2014; the Consent Order is currently active. The Schedule of Compliance in the Consent Order includes: a schedule for the upgrade and expansion of the existing plant, the submission of quarterly progress reports to DEQ regarding the upgrade and expansion of the sewage treatment plant, and the requirement to operate and maintain the facility in a workmanlike manner to ensure the best quality of effluent discharged. Additionally, the Consent Order has interim limits for BOD_5 and TSS.

See **Attachment 16**.

b. **Staff Comments:** Staff decided to delay permit reissuance until the CTO for the new sewage treatment plant was issued. This decision allowed the 0.045 MGD Design Flow Tier to be removed from the permit.

c. **Public Comment:** No comments were received during the public notice.

ATTACHMENTS

Attachment 1	Flow Frequency Determination
Attachment 2	CTO for the 0.07 MGD Upgrade
Attachment 3	Facility Schematic
Attachment 4	King George Topographic Map (DEQ #181C)
Attachment 5	March 2015 Site Visit
Attachment 6	2015 Planning Statement
Attachment 7	Water Quality Criteria/WLA Spreadsheet
Attachment 8	Derivation of Ammonia Limits
Attachment 9	Stream Model Dated October 1996
Attachment 10	Excerpt from 9VAC25-820-70; Registration List dated January 1, 2012
Attachment 11	Public Notice
Attachment 12	The Compliance Schedules and interim limits from the 2012 and 2014 Consent Orders

MEMORANDUM

Attachment 1

DEPARTMENT OF ENVIRONMENTAL QUALITY

13901 Crown Court | Northern Virginia Regional Office, Woodbridge, Virginia 22193 | (703) 583-3800

Subject: **FLOW FREQUENCY REQUEST**

To: Paul E. Herman, OWPP-Office of Water Quality Assessment

From: Jim Olson, NVRO - (703) 583-3836 JAO

Date: July 9, 2001

Facility Name: Presidential Lakes Section 14

Permit Number: VPDES Permit No. VA0086720

Permit Type: Minor, Municipal

Permit Action: Reissuance (permit expires 05/19/02)

Flow Frequencies Needed: 7Q10 (low) ✓ 7Q10 (high) ✓ 1Q10 (low) ✓ 1Q10(high) ✓
30Q5 (low) ✓ 30Q5 (high) ✓ Harmonic Mean ✓
Other: N/A

Outfall Description:

#	Latitude	Longitude	Receiving Stream	Drainage Area*	7Q10*
001	38° 17' 26"	77° 14' 44"	Popcastle Creek	0.3 mi^2	0.0 cfs

Current Reference Gauging Stations

Name	Number	Drainage Area*	7Q10*
Piscataway Creek, Md	#01653600	39.5 mi^2	0.0 cfs

Comments:

Enclosures: Excerpt of topo maps- King George (# 181C) & Passapatanzy (# 182D)Quads
* Flow Frequency Determination Memorandum dated January 24,1997

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

September 18, 2015

King George County
Presidential Lakes – Section 14 WWTP
PTL#26357, VA0086720

Via E-mail (clparker@aquaamerica.com)

Mr. Cliff Parker
Aqua Presidential, Inc.
2414 Granite Ridge Rd
Rockville, VA 23146

Dear Mr. Parker:

In accordance with 9VAC25-790-190 of the Commonwealth of Virginia's *Sewage Collection and Treatment Regulations*, this letter transmits the Certificate to Operate (CTO) for Presidential Lakes – Section 14 WWTP located in King George County. The CTO is being issued based on the Application for Certificate to Operate dated September 17, 2015, and received by this office on September 18, 2015.

If you have any questions about this letter or the approval process, please contact Alison Thompson at (703)-583-3834 or alison.thompson@deq.virginia.gov.

Respectfully,

for Bryant Thomas
Water Permit & Planning Manager

cc: VA0086720
VDH District Office, attn: Environmental Health Manager
King George County Local Building Official
Terry Blankenship (TLBlankenship@aquaamerica.com)
Bradley Campbell (BACampbell@aquaamerica.com)

Attachment: CTO

Attachment 2

Department of Environmental Quality
APPLICATION for CERTIFICATE TO OPERATE
Under the Sewage Collection and Treatment Regulations 9 VAC 25-790
and/or the Water Reclamation and Reuse Regulation 9 VAC 25-740

See instructions. Submit 1 copy of this form and any attachments. Form will expand as you enter information.

Project Title: (as it appears on plans) Presidential Lakes – Section 14, Wastewater Treatment Plant P.E. Seal Date on Cover: 7/3/2014 Specifications Title and Date: Presidential Lakes – Section 14, Wastewater Treatment Plant (7/3/2014)	
Location of Project: Presidential Lakes WWTP	County/City: King George County, Virginia
Receiving Wastewater Collection System(s): N/A	
Receiving Sewage Treatment Plant(s): Presidential Lakes WWTP	
PROJECT OWNER: Aqua Presidential, Inc.	**RESPONSIBLE ENGINEER**
Owner Contact Name:	Name: Terry L. Blankenship, P.E.
Title: Clifton L. Parker, IV, P.E.	Company Name: Aqua Virginia, Inc.
Address: 2414 Granite Ridge Road Rockville, Virginia 23146	Address: 2414 Granite Ridge Road Rockville, Virginia 23146
Phone: 804-749-8868	Phone: 804-305-0675
Email: clparkeriv@aquaamerica.com	Email: TLBlankenship@aquaamerica.com
Owner Signature and Date: Clifton Parker IV	

PTL NUMBER FROM CERTIFICATE TO CONSTRUCT: 26147

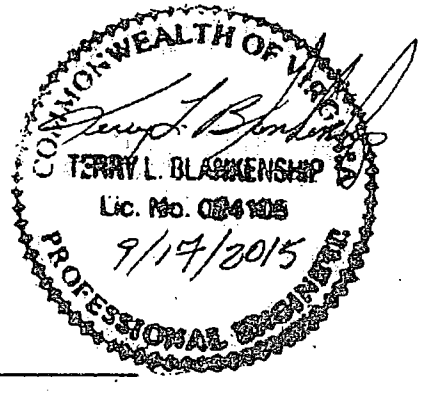
Attach Copy of the original Certificate to Construct if issued prior to November 9, 2008. If applicable, provide verification of compliance with any conditions in the Certificate to Construct.

Design Flow: (a) average daily flow (MGD): 0.070 (b) peak flow (MGD): 0.200
For sewage treatment plant, water reclamation or satellite reclamation projects, provide the VPDES/VPA Permit Number: VA0086720
Is a new Discharge Monitoring Report (DMR) or other monthly monitoring report required? Yes ☒ No ☐
For Pump Stations, Sewage Treatment Plants, and Reclamation Systems, check Reliability Class: I ☒ II ☐ III ☐ NA ☐

Two options are provided for the Statement of Completion, depending on whether the project is being authorized under the Sewage Collection and Treatment Regulations, the Water Reclamation and Reuse Regulations, or BOTH. Please check the appropriate box and then provide signature and seal below as indicated.

☒ *The following statement of completion for issuance of a Certificate to Operate under the Sewage Collection and Treatment Regulations must be signed and sealed by the responsible engineer.* (DEQ will not conduct a confirming inspection.)

"The construction of the project has been completed in accordance with the referenced plans and specifications or revised only in accordance with 9 VAC 25-790-180.B, and inspections have been performed to make this statement in accordance with Section 9 VAC 25-790-180.C.1 of the Sewage Collection and Treatment Regulations."



Terry L. Blankenship 024105
Licensed Engineer's Signature and original seal (signed and dated)

☐ *The following statement of completion for issuance of a Certificate to Operate under the Water Reclamation and Reuse Regulation must be signed and sealed by the responsible engineer.* (DEQ will not conduct a confirming inspection.)

"The construction of the project has been completed in accordance with the referenced plans and specifications or revised only in accordance with 9 VAC 25-740-120-B.2.b. and inspections have been performed to make this statement in accordance with Section 9 VAC 25-40-120.B.3.a. of the Water Reclamation and Reuse Regulations."

Licensed Engineer's Signature and original seal (signed and dated)

For DEQ use only:

In accordance with *Code of Virginia* 1950, as amended, Title 62.1, Section 62.1-44.19, this form, signed by the appropriate DEQ representative, serves as the **Certificate to Operate** for the referenced project.

Alison Thompson		9/18/15	26357
Name	Signature	Date	CTO PTL Number

Department of Environmental Quality Authorized Representative

An Operation and Maintenance Manual must be submitted to the DEQ Regional Office in accordance with 9 VAC 25-790 for sewage treatment plants, 9 VAC 25-740 for water reclamation systems and satellite reclamation systems and VPDES or VPA permit requirements.

For pump stations, an Operation and Maintenance Manual must be maintained for the facility in accordance with 9 VAC 25-790, but is NOT to be submitted to DEQ. The pump station must be operated and maintained in accordance with that manual.

GENERAL BACKGROUND

PRESIDENTIAL LAKES WWTP

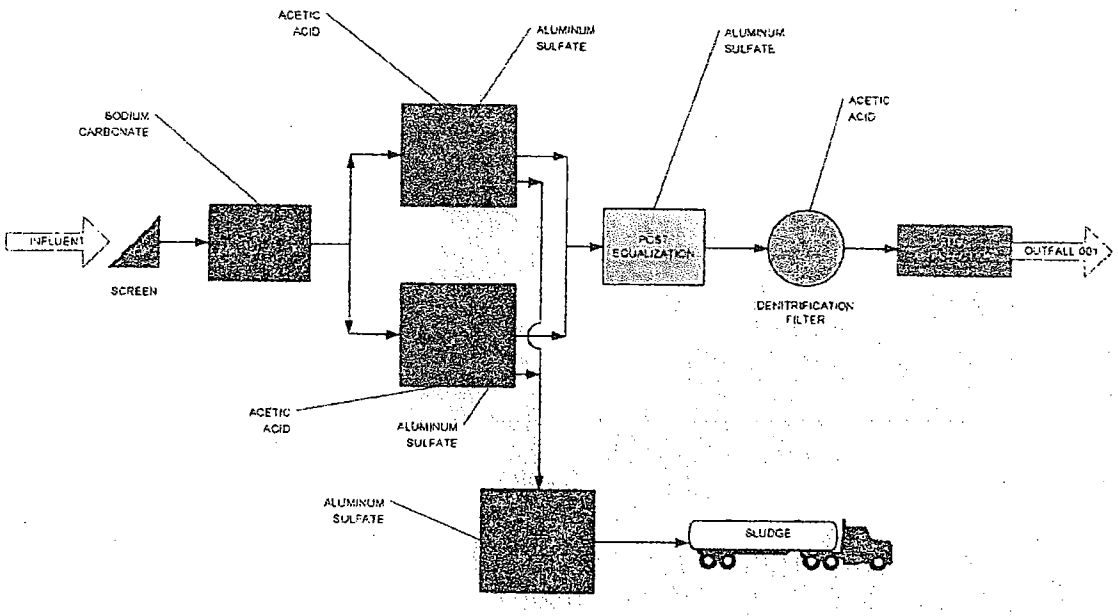
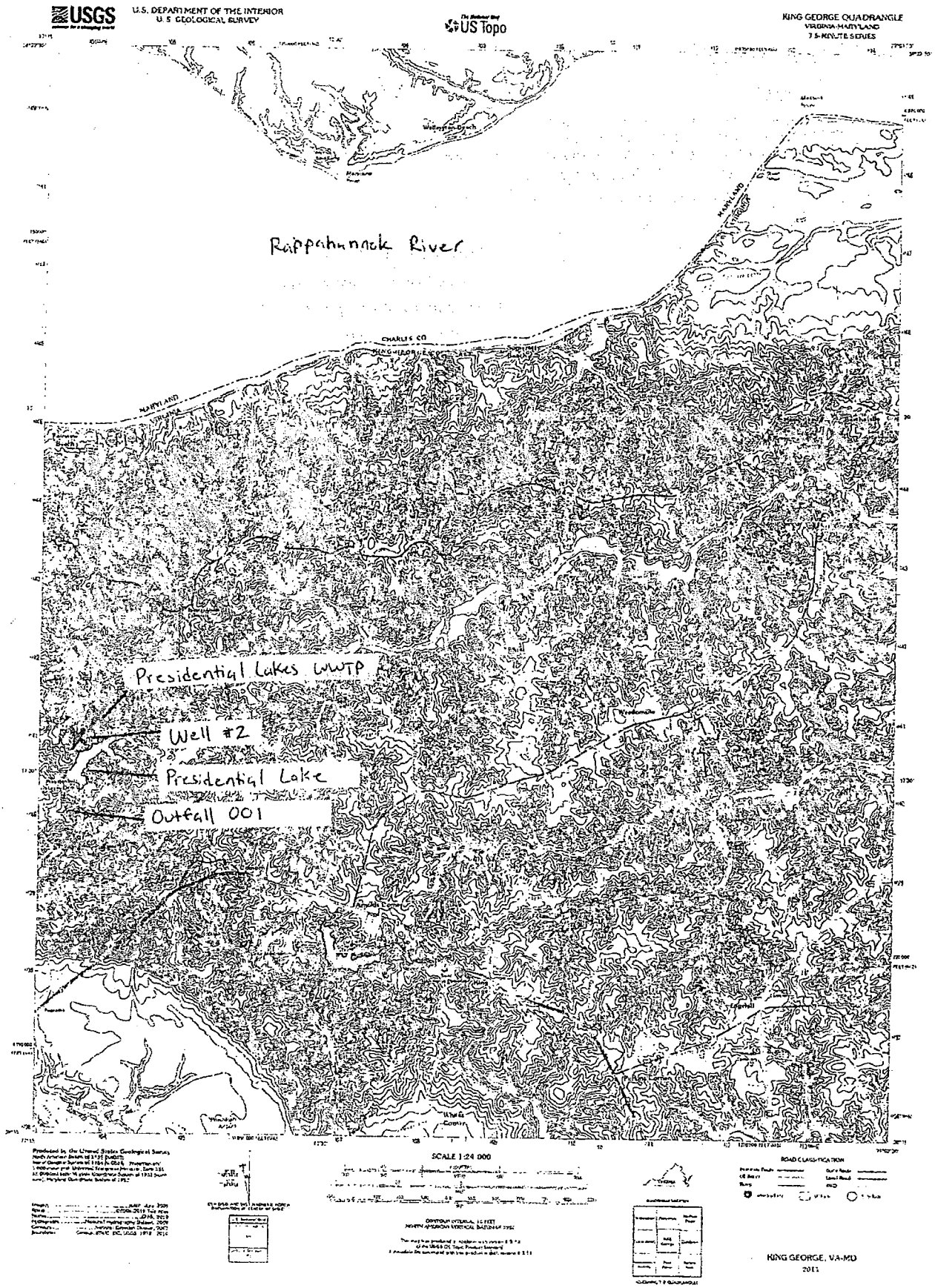


FIGURE 1

Attachment 3



Attachment 4

VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

MEMORANDUM

Northern Regional Office

TO: File

FROM: Anna Westernik, Water Permit Writer

DATE: April 9, 2015

SUBJECT: March 30, 2015 Site Inspection of the Presidential Lakes Section 14 STP (VA0086720)

A site visit was made to the Presidential Lakes Section 14 STP on March 30, 2015 for the purpose of touring the facility prior to reissuing the permit. Individuals present during the inspection were Brad Campbell, Luther Ghorley, and Rob Warner from Aqua Virginia and me.

The Presidential Lakes Section 14 WWTP is a privately run sewage treatment plant serving a subdivision with 100% residential inputs from individual grinder pumps into the collection system. It is rated at a design flow of 0.045 MGD, with a planned expansion to 0.07 MGD.

The current wastewater treatment facility consists of a barscreen, an aerated equalization basin, a complete mixed activated sludge basin operating in an extended aeration/nitrification mode, secondary clarification, two multi-media filters (anthracite coal and sand beds), ultraviolet (UV) disinfection, and post aeration. The final effluent is pumped to the headwaters of Popcastle Creek, just below the dam of Presidential Lakes. The Outfall Number 001 location has been designated after the post aeration tank prior to being pumped to the receiving stream.

For a number of months during the past several years, the facility's flow has either been at or over the facility's 95% design flow. Aqua Virginia has taken over operations of the facility under the name of Aqua Presidential. A new sequencing batch reactor (SBR) facility if being built directly next to the current treatment works. It is rated at a design flow of 0.07 MGD.

On this date, sludge and algae were present in the basin after the clarifier, solids were present in the chamber after UV disinfection, and algae and sedimentation were observed in the receiving stream. Popcastle Creek is approximately 6" deep and 2' wide in the discharge algae with a silt and rock bottom. No life was observed in the stream.

To:	Anna Westernik
From:	Rebecca Shoemaker
Date:	July 15, 2015
Subject:	Planning Statement for the Presidential Lakes Section 14 STP
Permit Number:	VA0086720

Information for Outfall 001:

Discharge Type: Municipal
Discharge Flow: 0.045 MGD with an expansion to 0.07 MGD
Receiving Stream: Popcastle Creek
Latitude / Longitude: 38° 17' 26" -77° 14' 47"
Rivermile: 2.7
Streamcode: 3-POP
Waterbody: VAN-E21R
Special Standards: Class III, Section 4, no special standards
Drainage Area: 0.3 square miles

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   This facility discharges to Popcastle Creek, which has not been monitored or assessed. Lambs Creek is located approximately 2.7 miles downstream from Outfall 001 and DEQ ambient monitoring station 3-LAM000.57 is located on Lambs Creek, approximately 2.7 miles downstream from Outfall 001. The following is the water quality summary for this segment of Lambs Creek, as taken from the 2012 Integrated Report:

   Class III, Section 4.

   DEQ monitoring stations located on this segment of Lambs Creek:
   - *ambient water quality monitoring station 3-LAM000.57, at Route 3*

   E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for the Tidal Freshwater Rappahannock River. The aquatic life and wildlife uses are considered fully supporting.The fish consumption use was not assessed.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

   No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the 2012 Integrated Report							
Lambs Creek	Recreation	*E. coli*	2.7 miles	Tidal Freshwater Rappahannock River Bacteria 05/05/2008	1.22E+11 cfu/year E. coli	126 cfu/100 ml *E. coli* --- 0.07 MGD	---
Rappahannock River*	Fish Consumption	PCBs	3.3 miles	---	---	---	2016

*The Rappahannock River is also listed with a dissolved oxygen impairment for the aquatic life and open water aquatic life uses in the 2014 Integrated Report, which is currently in draft format and is under review by EPA. It is expected that this segment of the Rappahannock River will be listed for the aquatic life and open water aquatic life uses in the final 2014 Integrated Report. The dissolved oxygen impairment will be covered by the completed TMDL for the Chesapeake Bay watershed; however, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

The tidal Rappahannock River, which is located approximately 3.3 miles downstream of this facility, is listed with a PCB impairment. In support for the PCB TMDL that is scheduled for development by 2016 for the tidal Rappahannock River, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal discharger. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a small wastewater treatment facility (<0.1 MGD). Based on this information, this facility will not be requested to monitor for low-level PCBs.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within five miles of this discharge.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Presidential Lakes, Sec. 14 WWTP Permit No.: VA0086720

Receiving Stream: Popcastle Creek Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	50 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	15 deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8 SU
10% Maximum pH =	SU	30Q10 (Wet season)	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.07 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	8.41E+00	1.24E+00	na	--	8.41E+00	1.24E+00	na	--	--	--	--	--	--	--	--	--	8.41E+00	1.24E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	8.41E+00	2.36E+00	na	--	8.41E+00	2.36E+00	na	--	--	--	--	--	--	--	--	--	8.41E+00	2.36E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine [C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	--	--	--	--	--	--	--	--	1.8E+00	6.6E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+02	4.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	--	--	--	--	--	--	--	--	7.0E+00	5.0E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD [C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE [C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	--	--	--	--	4.9E+01	5.6E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.0E+02	1.1E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	1.0E+00	--	na	--	1.0E+00	--	na	--	--	--	--	--	--	--	--	--	**1.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	6.5E+01	6.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**6.5E+01**	**6.6E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	3.9E-01
Chromium III	2.5E+01
Chromium VI	6.4E+00
Copper	2.8E+00
Iron	na
Lead	3.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	6.8E+00
Selenium	3.0E+00
Silver	4.2E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

7/22/2015 8:16:10 AM

Facility = Presidential Lakes, Sec. 14 WWTP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 8.41
WLAc = 1.24
Q.L. = 0.2
# samples/mo. = 4
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 2.50191091583623
Average Weekly limit = 2.50191091583623
Average Monthly LImit = 1.71062084695778

The data are:

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7/16/2010 11:03:55 AM

Facility = Presidential Lakes, Section 14
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 8.4
WLAc = 1.3
Q.L. = .2
# samples/mo. = 4
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 2.6229711214412
Average Weekly limit = 2.6229711214412
Average Monthly LImit = 1.79339282342347

The data are:

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STREAM INSPECTION REPORT FORM

Discharge Name: Presidential Lakes Section 14 STP

Location: Off of State Route 608, King George County

General Stream Information:

Stream Name: Popcastle Creek

Topographic Map (attach copy): Passpatanzy Quad #182D and KingGeorge Quad #181C

Basin: Rappahannock River Class: III Special Standards: q

Are the standards for this stream violated due to natural causes? (Y/N) No

Is this stream correctly classified? (Y/N) Yes

If "N", what is the correct classification? N/A

Additional Discharges Information:

Is there a discharger within 3 miles upstream of the proposal? (Y/N) No

Does antidegradation apply to this analysis? (Y/N) No

Any dams in stream section being modeled? (Y/N) No

Notes:

Inspected by Jim Olson Date 10/17/96 Region NVRO

Attachment 9

STREAM INSPECTION REPORT FORM

(Fill In This Page for Each Segment to be Modeled)

Specific Stream Information From Field Inspection: Segment Number 1

Reason form Defining Segment: Tributary at End ____ Physical Change at End ____
Discharge at End ____ End of Model 1

Length of Segment (mi.) 2.7

Estimated Average Width of Section (ft.) 3

Estimated Average Depth of Section (ft.) in Stream Center 0.125

Estimated Average Velocity of Section (ft/sec) 0.4

Estimated Flow in the Segment (MGD) 0.096945

General Type of Cross Section in Segment: Rectangular ____ Triangular ____ Deep Narrow U ____ Wide Shallow Arc X
Irregular ____ No Defined Channel ____

General Channel Characteristics of Segment:
Mostly Straight ____ Moderately Meandering X Severely Meandering ____ No Defined Channel ____

Does the stream have a pool and riffle character? (Y/N) No
If "Y" % of length that is pools ____ Average depth of pools (ft) ____
% of length that is riffles ____ Average depth of riffles (ft) ____

Bottom: Sand ____ Slit X Gravel ____ Small Rock ____ Large Rock ____ Boulders ____

Sludge Deposits: None X Trace ____ Light ____ Heavy ____

Plants: Rooted: None X Trace ____ Light ____ Heavy ____

Algae: None X Film on Edges Only ____ Film on Entire Bottom ____

Does the water have an evident green color? (Y/N) No

Tributary: (Fill in if a tributary enters at the end of the segment)

Tributary Name: ____

Width (ft) ____ Depth (ft) ____ Estimated Flow (MGD) ____

Any evident Water Quality problems in the Trib.? (Y/N) ____

If "Y", explain: ____

Discharges: (Fill in if a discharge enters at the end of the segment)

Discharge Name: ____

Any evident problems caused by this discharge? (Y/N) ____

If "Y", explain: ____

DATA PREPARATION WORKSHEET

(This Page is needed for Each Separate Segment being Modeled)

The first segment starts at the discharge being modeled and segment ends are defined according to the field inspection. Normally a distance of 3 to 5 miles is sufficient for a single discharge model. Dilution by a major tributary is often sufficient to allow the model to be ended. You should, however, inspect sufficient stream length to allow you to increase the number of segments or total model length if the model shows that the critical area is outside your initial estimates. This will allow the addition of segments and the preparation of a new data set without the necessity to re-inspect the stream. As a general guideline, the higher the percentage the discharge is of the total stream. As a general guideline, the higher the percentage the discharge is of the total stream flow the longer the distance you will have to model. Ten miles should suffice for practically all situations.

Segment Definition Code: 4

Reasons for Defining a Segment:
- 1 = A Tributary Enters at the Segment End
- 2 = A Significant Physical Change Occurs at Segment End
- 3 = Another Discharge Enters at Segment End
- 4 = The Model Ends

Length of Segment (Mi.): 2.7

Based on the stream characteristics you observed, use your judgement and the flow ratio below to estimate the segment's physical characteristics at the 7Q10 flow condition. Note that the model checks to see if cross sectional area times velocity is equal to the flow (V=QA). It checks to see if the drainage are increases in the downstream direction. You will run into trouble if the estimates you make are unreasonable.

(a): Enter Flow Estimated During Inspection (MGD): 0.096945

(b): Enter 7Q10 at Model Start <Include Discharge> (MGD): 0.035

(c): Calculate the Flow Ratio (a/b): 2.77

Estimated 7Q10 Width (Ft.): 1

Estimated 7Q10 Depth (Ft.): 0.22

Estimated 7Q10 Velocity (Ft./sec.): 0.25

Continuity Check:

(a): Multiply: Width x Depth x Velocity x .6463: 0.0355465

(b): Enter 7Q10 at Model Start <Include Discharge> (MGD): 0.035

If the two numbers above differ by such, you have made some sort of error. Review your data and revise you estimates.

Drainage Area at the Beginning of This Segment (Sq.Mi.): 0.3

Drainage Area at the End of This Segment (Sq.Mi.): 5.05

(Omit the drainage area of any tributaries that are included in this segment under the "Tributary at End" section below).

Elevation at the Beginning of This Segment (Ft.): 80

Elevation at the End of This Segment (Ft.): 10

The following data is based on the field inspection and you should estimate what the overall "average" segment will look like at the 7Q flow condition. You enter the number code that best describes what you saw for this segment.

Type of Cross Section: 4

1 = Rectangular; 2 = Triangular; 3 = Deep Narrow U; 4 = Wide Shallow Arc;
5 = Irregular; 6 = No Defined Channel

DATA PREPARATION WORKSHEET

(This Page is Needed Once for each Model)

Use this form to assist in the preparation of the model input data. The form is arranged so that the data appears in the order needed by the model. Once the form is complete, you may input the data for a model run by simply entering the numbers and other data that you have put in the right hand column. There is some guidance provided here, but for detailed guidance refer to the manual or call headquarters for assistance.

Some of the input data are character, such as names; some are codes, such as "Y", "N" kor "3"; and some are actual numeric data such as "5.6". Be careful to enter the correct item called for. Some of the lines below may be blank depending on choices. Leave them blank and do not input data for blank lines when running the model. Miscellaneous items that are not in the right most column are intermediate guidelines, not input data.

Site Inspection Performed? (Y/N)	Yes
Name of Receiving Stream	Popcastle Creek
River Basin	Rappahannock River
Section	4
Classification	III
Are Standards Violated Due to Natural Causes? (Y/N)	No
Class and Standards Appropriate for the Stream? (Y/N)	Yes
Is there a Dam in the Reach to be Modeled? (Y/N)	No
Is There a Discharge Within 3 Miles of Model Start? (Y/N)	No
If "Y": Flow of Upstream Discharge (MGD)	
BOD5 at Model Start (Mg/l)	
TKN at Model Start (Mg/l)	
D.O. at Model Start (Mg/l)	
Name of Discharge Being Modeled	Pres. Lakes Section 14 STP
Proposed Flow (MGD)	0.035
Proposed BOD (Mg/l)	14.0 mg/l
Proposed TKN (Mg/l)	4.2 mg/l
Proposed D.O. Start (Mg/l)	6.0 mg/l
Number of Segments to be Modeled (Determined during your field inspection and based on the physical characteristics of the stream of the stream. See "Reason for Defining Segment" on Page 2)	1
7Q Estimation Method Code (Two methods are provided: 1 = Drainage Area Comparison; 2 = Flow Comparison You may compare drainage areas or observed flows at the model site with a gauge).	1
Name of Gauge Used to Estimate 7Q10	White Oak Run
If Method 1: Gauge Drainage Area (Sq.Mi.)	8.28
Gauge 7Q10 (MGD)	0.00
Drainage Area at Discharge (Sq.Mi.)	0.3
If Method 2: Gauge 7Q10 (MGD)	
Observed Flow at Gauge (MGD)	
Observed Flow at Discharge (Sq.Mi.)	
Is the Stream a Dry Ditch? (Y/N)	Yes
Does Antidegradation Apply? (Y/N)	No
Allocation Temperature for the Model (°C) (Obtain a STORET retrieval for the nearest monitoring station to the discharge. Enter the 98th percentile temperature of the STORET data for the period being modeled.)	25

DATA PREPARATION WORKSHEET

General Character of Stream: 2

1 = Mostly Straight; 2 = Moderately Meandering; 3 = Severely Meandering
4 = No Defined Channel

Does This Segment Have a Pool and Riffle Character? (Y/N): No

If "Y": Percent of the Length of This Segment That is Pools ÷ 100 _____
Percent of the Length of This Segment That is Riffles ÷ 100 _____
Estimated Average Depth of the Pools (Ft.) _____
Estimated Average Depth of the Riffles (Ft.) _____

Check that this is reasonable with the overall depth you entered on previous page:

(a): Enter the 7Q10 Depth (Ft.) <from Previous page> _____
(b): Enter % Pool Length x Pool Depth _____
(c): Enter % Riffle Length x Riffle Depth _____
(d): Enter (b+c)/100 _____

General Bottom Type: 2

1 = Sand; 2 = Silt; 3 = Gravel; 4 = Small Rock; 5 = Large Rock; 6 = Boulders

Sludge Deposits: 1

1 = None; 2 = Trace; 3 = Light; 4 = Heavy
(This is organic sludge from an inadequate or malfunctioning STP. Do not confuse with silt deposits from other sources.)

Plants: 1

1 = None; 2 = Trace; 3 = Light; 4 = Heavy
(These are submerged macrpohytes or rooted plants on the waterway.

Algae: 1

1 = None; 2 = Trace; 3 = Light; 4 = Heavy
(This is visually evident algae growth in the water, e.g. - green films, green filaments or green masses of algae attached to the bottom or in shallow parts of the bank.)

Does the Water Have an Evident Green Color? (Y/N): No

(This is used as an indication of phytoplankton that one cannot normally see except by a general color imparted to the water by the floating cells.)

Tributary at End

If defined the segment because there is a tributary at the end, complete the following:

Tributary Drainage Area (Sq.Mi.) _____
Tributary Flow (MGD) (Tributary D.A. x Gauge 7Q10 / Gauge D.A. _____

NOTE! "Standard" background values will be used for this tributary (i.e. - BOD5 = 2 Mg/l, TKN = 0 Mg/l, D.O. = 90% of D.O. Saturation). If these values are not appropriate or the tributary has a discharge within 3 miles of the confluence with the stream being modeled, then redefine the segment as "3 - Discharge at End" and go the next section.

Discharge at End

If you defined the segment because there is another discharge at the end, complete the following:

Discharge Name _____
Discharge Flow (MGD) _____
Discharge BOD5 (Mg/l) _____
Discharge TKN (Mg/l) _____
Discharge D.O. (Mg/l) _____

****

REGIONAL MODELING SYSTEM VERSION 3.2

DATA FILE SUMMARY

****

THE NAME OF THE DATA FILE IS: PRESLAKE.MOD

THE STREAM NAME IS: Popcastle Creek
THE RIVER BASIN IS: Rappahannock River
THE SECTION NUMBER IS: 4
THE CLASSIFICATION IS: III

STANDARDS VIOLATED (Y/N) = N
STANDARDS APPROPRIATE (Y/N) = Y

DISCHARGE WITHIN 3 MILES (Y/N) = N

THE DISCHARGE BEING MODELED IS: Presidential Lakes Section 14 STP

PROPOSED LIMITS ARE:
FLOW = .035 MGD
BOD5 = 14 MG/L
TKN = 4.2 MG/L
D.O. = 6 MG/L

THE NUMBER OF SEGMENTS TO BE MODELED = 1

7Q10 WILL BE CALCULATED BY: DRAINAGE AREA COMPARISON
THE GAUGE NAME IS: White Oak Run
GAUGE DRAINAGE AREA = 8.28 SQ.MI.
GAUGE 7Q10 = 0 MGD
DRAINAGE AREA AT DISCHARGE = .3 SQ.MI.

STREAM A DRY DITCH AT DISCHARGE (Y/N) = Y
ANTIDEGRADATION APPLIES (Y/N) = N

ALLOCATION DESIGN TEMPERATURE = 25 ½C

SEGMENT INFORMATION

####### SEGMENT # 1 #######

SEGMENT ENDS BECAUSE: THE MODEL ENDS

SEGMENT LENGTH = 2.7 MI

SEGMENT WIDTH = 1 FT
SEGMENT DEPTH = .22 FT
SEGMENT VELOCITY = .25 FT/SEC

DRAINAGE AREA AT SEGMENT START = .3 SQ.MI.
DRAINAGE AREA AT SEGMENT END = 5.05 SQ.MI.

ELEVATION AT UPSTREAM END = 80 FT
ELEVATION AT DOWNSTREAM END = 10 FT

THE CROSS SECTION IS: WIDE SHALLOW ARC
THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = N

THE BOTTOM TYPE = SILT
SLUDGE DEPOSITS = NONE
AQUATIC PLANTS = NONE
ALGAE OBSERVED = NONE
WATER COLORED GREEN (Y/N) = N

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-11-1997 08:51:06

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REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Presidential Lakes Section 14 STP DISCHARGE

TO Popcastle Creek

COMMENT: Highest cBOD allowed W/O violating D.O. Standard

THE SIMULATION STARTS AT THE Presidential Lakes Section 14 STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .035 MGD cBOD5 = 14 Mg/L TKN = 4.2 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.490 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	2.70	0.336	15.556	1.400	0.400	0.000	45.00	25.00	8.322

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0350 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	35.000	5.196
0.100	0.100	5.642	33.896	5.141
0.200	0.200	5.412	32.827	5.086
0.300	0.300	5.274	31.791	5.032
0.400	0.400	5.202	30.788	4.978
0.500	0.500	5.177	29.817	4.925
0.600	0.600	5.186	28.877	4.873
0.700	0.700	5.218	27.966	4.821
0.800	0.800	5.266	27.084	4.770
0.900	0.900	5.326	26.229	4.719
1.000	1.000	5.393	25.402	4.669
1.100	1.100	5.464	24.601	4.619
1.200	1.200	5.538	23.825	4.570
1.300	1.300	5.613	23.073	4.522
1.400	1.400	5.689	22.346	4.473
1.500	1.500	5.764	21.641	4.426
1.600	1.600	5.837	20.958	4.379
1.700	1.700	5.910	20.297	4.332
1.800	1.800	5.981	19.657	4.286
1.900	1.900	6.050	19.037	4.240
2.000	2.000	6.118	18.436	4.195
2.100	2.100	6.184	17.855	4.151
2.200	2.200	6.248	17.292	4.107
2.300	2.300	6.310	16.746	4.063
2.400	2.400	6.370	16.218	4.020
2.500	2.500	6.428	15.706	3.977
2.600	2.600	6.485	15.211	3.935
2.700	2.700	6.540	14.731	3.893

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-11-1997 08:50:56

DATA FILE = PRESLAKE.MOD

********** ********** **********

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Presidential Lakes Section 14 STP DISCHARGE

TO Popcastle Creek

COMMENT: D.O. Standard violated with this cBOD limit

THE SIMULATION STARTS AT THE Presidential Lakes Section 14 STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .035 MGD cBOD5 = 15 Mg/L TKN = 4.2 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.490 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	2.70	0.336	15.556	1.400	0.400	0.000	45.00	25.00	8.322

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

********************** RESPONSE FOR SEGMENT 1 **********************

TOTAL STREAMFLOW = 0.0350 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	37.500	5.196
0.100	0.100	5.574	36.317	5.141
0.200	0.200	5.297	35.172	5.086
0.300	0.300	5.127	34.062	5.032
0.400	0.400	5.034	32.988	4.978
0.500	0.500	4.996	31.947	4.925
0.600	0.600	4.996	30.940	4.873
0.700	0.700	5.025	29.964	4.821
0.800	0.800	5.072	29.018	4.770
0.900	0.900	5.132	28.103	4.719
1.000	1.000	5.201	27.217	4.669
1.100	1.100	5.276	26.358	4.619
1.200	1.200	5.354	25.527	4.570
1.300	1.300	5.433	24.722	4.522
1.400	1.400	5.513	23.942	4.473
1.500	1.500	5.593	23.187	4.426
1.600	1.600	5.672	22.455	4.379
1.700	1.700	5.749	21.747	4.332
1.800	1.800	5.825	21.061	4.286
1.900	1.900	5.899	20.396	4.240
2.000	2.000	5.971	19.753	4.195
2.100	2.100	6.041	19.130	4.151
2.200	2.200	6.110	18.527	4.107
2.300	2.300	6.176	17.942	4.063
2.400	2.400	6.240	17.376	4.020
2.500	2.500	6.303	16.828	3.977
2.600	2.600	6.364	16.297	3.935
2.700	2.700	6.422	15.783	3.893

èëë£
¤ THE STANDARDS ARE VIOLATED IN THIS SEGMENT ¤
àëë¥

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-11-1997 08:52:47

DATA FILE = PRESLAK2.MOD

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REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Presidential LAkes Section 14 STP DISCHARGE

TO Popcastle Creek

COMMENT: HIGHEST CBOD ALLOWED W/O VIOLATING D.O. STANDARD

THE SIMULATION STARTS AT THE Presidential LAkes Section 14 STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .07 MGD cBOD5 = 14 Mg/L TKN = 4.2 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.490 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	2.70	0.336	15.556	1.400	0.400	0.000	45.00	25.00	8.322

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

* THE TKN limit of 4.2 mg/L is based on the Assumption that TKN is Equal to 2 X the Ammonia limit. Therefore An Ammonia limit of 2.1 mg/L is Equal to A TKN Value of 4.2 mg/L

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0700 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	35.000	5.196
0.100	0.100	5.642	33.896	5.141
0.200	0.200	5.412	32.827	5.086
0.300	0.300	5.274	31.791	5.032
0.400	0.400	5.202	30.788	4.978
0.500	0.500	5.177	29.817	4.925
0.600	0.600	5.186	28.877	4.873
0.700	0.700	5.218	27.966	4.821
0.800	0.800	5.266	27.084	4.770
0.900	0.900	5.326	26.229	4.719
1.000	1.000	5.393	25.402	4.669
1.100	1.100	5.464	24.601	4.619
1.200	1.200	5.538	23.825	4.570
1.300	1.300	5.613	23.073	4.522
1.400	1.400	5.689	22.346	4.473
1.500	1.500	5.764	21.641	4.426
1.600	1.600	5.837	20.958	4.379
1.700	1.700	5.910	20.297	4.332
1.800	1.800	5.981	19.657	4.286
1.900	1.900	6.050	19.037	4.240
2.000	2.000	6.118	18.436	4.195
2.100	2.100	6.184	17.855	4.151
2.200	2.200	6.248	17.292	4.107
2.300	2.300	6.310	16.746	4.063
2.400	2.400	6.370	16.218	4.020
2.500	2.500	6.428	15.706	3.977
2.600	2.600	6.485	15.211	3.935
2.700	2.700	6.540	14.731	3.893

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-10-1997 15:56:56

DATA FILE = PRES1-A.MOD

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REGIONAL MODELING SYSTEM VERSION 3.2

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MODEL SIMULATION FOR THE Presidential LAkes Section 14 STP DISCHARGE

TO Popcastle Creek

COMMENT: D.O. STANDARD VIOLATED WITH THIS CBOD LIMIT

THE SIMULATION STARTS AT THE Presidential LAkes Section 14 STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .07 MGD cBOD5 = 15 Mg/L TKN = 4.2 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.490 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

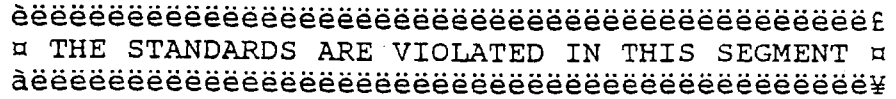
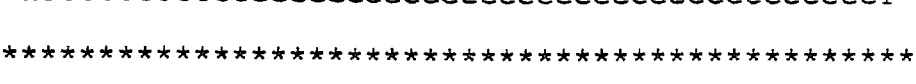
SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	2.70	0.336	15.556	1.400	0.400	0.000	45.00	25.00	8.322

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0700 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	37.500	5.196
0.100	0.100	5.574	36.317	5.141
0.200	0.200	5.297	35.172	5.086
0.300	0.300	5.127	34.062	5.032
0.400	0.400	5.034	32.988	4.978
0.500	0.500	4.996	31.947	4.925
0.600	0.600	4.996	30.940	4.873
0.700	0.700	5.025	29.964	4.821
0.800	0.800	5.072	29.018	4.770
0.900	0.900	5.132	28.103	4.719
1.000	1.000	5.201	27.217	4.669
1.100	1.100	5.276	26.358	4.619
1.200	1.200	5.354	25.527	4.570
1.300	1.300	5.433	24.722	4.522
1.400	1.400	5.513	23.942	4.473
1.500	1.500	5.593	23.187	4.426
1.600	1.600	5.672	22.455	4.379
1.700	1.700	5.749	21.747	4.332
1.800	1.800	5.825	21.061	4.286
1.900	1.900	5.899	20.396	4.240
2.000	2.000	5.971	19.753	4.195
2.100	2.100	6.041	19.130	4.151
2.200	2.200	6.110	18.527	4.107
2.300	2.300	6.176	17.942	4.063
2.400	2.400	6.240	17.376	4.020
2.500	2.500	6.303	16.828	3.977
2.600	2.600	6.364	16.297	3.935
2.700	2.700	6.422	15.783	3.893

è  é
¤ THE STANDARDS ARE VIOLATED IN THIS SEGMENT ¤
à  ¥

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REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
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DATA FILE = PRES1-A.MOD

Facility	Individual VPDES Permit No.	General Permit Registration No.	General Permit Outfall No.	Design Flow (MGD)	Discharged TN Wasteload Allocation (lbs/yr)	TN Delivery Factor	Delivered TN Wasteload Allocation (lbs/yr)	Limit Effective Date	Basis for Limits	Changes to WQMP Allocations (see footnotes)
King George Co. – Rappahannock River Aggregate		VAN020056	500	--	--	--	7,797	1/1/2012	A	
Oakland Park STP	VA0086789	--	501	0.14	1,706	1.00	1,706	--	A	
Hopyard Farms WWTF	VA0089338	--	502	0.50	6,091	1.00	6,091	--	A	
Urbanna WWTP	VA0026263	VAN020034	500	0.10	1,218	1.00	1,218	1/1/2012	A	
US Army -Ft. A.P. Hill WWTP	VA0032034	VAN020035	500	0.53	6,457	1.00	6,457	1/1/2012	A	
Warsaw STP	VA0026891	VAN020036	500	0.30	3,655	1.00	3,655	1/1/2012	A	
Omega Protein (1)	VA0003867	VAN020037	500	3.21	21,213	1.00	21,213	1/1/2012	A	
Reedville S.D. WWTP	VA0060712	VAN020101	500	0.20	2,436	1.00	2,436	1/1/2012	A	
Kilmarnock WWTP	VA0020788	VAN020038	500	0.50	6,091	1.00	6,091	1/1/2012	A	
Rush River WWTP – Phase 1	VA0091651	VAN020108	500	0.06	1,462	0.61	892	1/1/2012	C	D
Rush River WWTP – Phase 2	VA0091651	VAN020108	500	0.06	1,706	0.61	1,040	(2)	C	D
Boston Water & Sewer STP	VA0088749	VAN020111	500	0.075	1,139	0.61	695	(2)	B	
Boston Water & Sewer STP	VA0088749	VAN020111	500	0.15	1,139	0.61	695	(2)	B	
Boston Water & Sewer STP	VA0088749	VAN020111	500	0.25	1,139	0.61	695	(2)	B	
Boston Water & Sewer STP	VA0088749	VAN020111	500	0.45	1,139	0.61	695	(2)	B	
Four Winds Campground STP	VA0060429	VAN020113	500	0.125	2,278	1.00	2,278	(2)	B	
Four Winds Campground STP	VA0060429	VAN020113	500	0.210	2,278	1.00	2,278	(2)	B	
Tides North WWTF	VA0029343	VAN020114	500	0.04	1,709	1.00	1.709	(2)	B	
Tides North WWTF	VA0029343	VAN020114	500	0.10	1,709	1.00	1.709	(2)	B	
Windmill Point Resort & Yacht Harbor	VA0060569	VAN020115	500	0.04	1,709	1.00	1,709	(2)	B	
Windmill Point Resort & Yacht Harbor	VA0060569	VAN020115	500	0.08	1,709	1.00	1,709	(2)	B	
Culpeper County Airpark WWTP	VA0068586	VAN020138	500	0.075	1,424	0.61	869	(2)	B	
Culpeper County Airpark WWTP	VA0068586	VAN020138	500	0.150	1,424	0.61	869	(2)	B	
Culpeper County Airpark WWTP	VA0068586	VAN020138	500	0.300	1,424	0.61	869	(2)	B	
Presidential Lakes Section 14 STP	VA0086720	VAN020109	500	0.07	1,994	1.0	1,994	(2)	B	
Rappahannock Basin Totals					**603,058**		**519,536**			

Facility	Individual VPDES Permit No.	General Permit Registration No.	General Permit Outfall No.	Design Flow (MGD)	Discharged TP Wasteload Allocation (lbs/yr)	TP Delivery Factor	Delivered TP Wasteload Allocation (lbs/yr)	Limit Effective Date	Basis for Limits	Changes to WQMP Allocations (see footnotes)
King George County – Rappahannock River Aggregate	--	VAN020056	500	--	--	--	585	1/1/2012	A	
Oakland Park STP	VA0086789	--	501	0.14	128	1.00	128	--	A	
Hopyard Farms WWTF	VA0089338	--	502	0.50	457	1.00	457	--	A	
Urbanna WWTP	VA0026263	VAN020034	500	0.10	91	1.00	91	1/1/2012	A	
US Army -Ft. A.P. Hill WWTP	VA0032034	VAN020035	500	0.53	484	1.00	484	1/1/2012	A	
Warsaw STP	VA0026891	VAN020036	500	0.30	274	1.00	274	1/1/2012	A	
Omega Protein (1)	VA0003867	VAN020037	500	3.21	1,591	1.00	1,591	1/1/2012	A	
Reedville S.D. WWTP	VA0060712	VAN020101	500	0.20	183	1.00	183	1/1/2012	A	
Kilmarnock WWTP	VA0020788	VAN020038	500	0.50	457	1.00	457	1/1/2012	A	
Rush River WWTP	VA0091651	VAN020108	500	0.06	183	1.00	183	1/1/2012	C	D
Boston Water & Sewer STP	VA0088749	VAN020111	500	0.075	152	1.00	152	(2)	B	
Boston Water & Sewer STP	VA0088749	VAN020111	500	0.15	152	1.00	152	(2)	B	
Boston Water & Sewer STP	VA0088749	VAN020111	500	0.25	152	1.00	152	(2)	B	
Boston Water & Sewer STP	VA0088749	VAN020111	500	0.45	152	1.00	152	(2)	B	
Four Winds Campground STP	VA0060429	VAN020113	500	0.125	305	1.00	305	(2)	B	
Four Winds Campground STP	VA0060429	VAN020113	500	0.21	305	1.00	305	(2)	B	
Tides North WWTF	VA0029343	VAN020114	500	0.04	228	1.00	228	(2)	B	
Tides North WWTF	VA0029343	VAN020114	500	0.10	228	1.00	228	(2)	B	
Windmill Point Resort & Yacht Harbor	VA0060569	VAN020115	500	0.04	228	1.00	228	(2)	B	
Windmill Point Resort & Yacht Harbor	VA0060569	VAN020115	500	0.08	228	1.00	228	(2)	B	
Culpeper County Airpark WWTP	VA0068586	VAN020138	500	0.075	190	1.0	190	(2)	B	
Culpeper County Airpark WWTP	VA0068586	VAN020138	500	0.150	190	1.0	190	(2)	B	
Culpeper County Airpark WWTP	VA0068586	VAN020138	500	0.300	190	1.0	190	(2)	B	
Presidential Lakes Section 14 STP	VA0086720	VAN020109	500	0.07	267	1.0	267	(2)	B	
Rappahannock Basin Totals					**45,721**		**45,721**			

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in King George County Virginia.

PUBLIC COMMENT PERIOD: October 21, 2015 to November 20, 2015

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Aqua Presidential, Inc.
2414 Granite Ridge Road
Rockville, VA 23146
VA0086720

NAME AND ADDRESS OF FACILITY: Presidential Lakes, Section 14 STP
Carter Lane, King George, VA 22485

PROJECT DESCRIPTION: Aqua Presidential, Incorporated has applied for a reissuance of a permit for the private Presidential Lakes, Section 14 Sewage Treatment Plant. The applicant proposes to release treated sewage wastewaters from a residential area at a rate of 0.07 million gallons per day into a water body. Sludge from the treatment process will be transported to the Massaponax Wastewater Treatment Plant (VA0025658) for disposal. The facility proposes to release the treated sewage into Popcastle Creek, located in King George County in the Rappahannock River Watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, Biochemical Oxygen Demand, Total Suspended Solids, Dissolved Oxygen, Ammonia as Nitrogen, *E. coli*, Total Nitrogen, and Total Phosphorus. The facility will be required to monitor for Total Kjeldahl Nitrogen and Nitrate+Nitrite.

NUTRIENT DISCHARGE: This facility is subject to the requirements of 9VAC25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, email, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment or may request electronic copies of the draft permit and fact sheet.

Name: Anna Westernik
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3837 Email: anna.westernik@deq.virginia.gov Fax: (703) 583-3821

Attachment 11

APPENDIX A
SCHEDULE OF COMPLIANCE

Presidential Service Company, Tier II, Inc. shall:

1. Within 30 days of the effective date of this Order submit to DEQ for review and approval, a plan and schedule with a completion deadline of no later than October 1, 2014, for the upgrade/expansion of the Facility to 0.07 MGD as described in Presidential Service's Preliminary Engineering Report (PER) submitted to DEQ on April 6, 2012. Said upgrade/expansion having, as Presidential Service asserts, been designed to that ensure all permit effluent limits and requirements, to specifically include the ammonia final effluent limits, set forth in the Permit are consistently met.

2. The schedule shall include the submission of monthly progress reports due on the 10th of each month beginning with the first month after the approval of the schedule by DEQ, until the completion of the upgrade/expansion of the Facility. Upon DEQ approval said plan and schedule shall become a part of and enforceable under the terms of this Order.

3. Operate and maintain the Facility in a workmanlike manner, in order to ensure that the Facility produces the best quality effluent of which it is capable.

Unless otherwise specified in this Order, Presidential Service Company, Tier II, Inc. shall submit all reports required by Appendix A of this Order to:

Virginia Department of Environmental Quality
Attn: Enforcement Staff
13901 Crown Court
Woodbridge, VA 22193

APPENDIX B
INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

From the effective date of this Order until completion of the corrective action requirements contained in paragraph 1 of Appendix A, but in no event later than October 1, 2014, Presidential Service Company, Tier II, Inc. shall monitor and limit the discharge from Outfall No. 001 of the Plant in accordance with VPDES Permit Number VA0086720, except as specified below. These interim limits shall retroactively apply, if applicable, as of the first day of the month in which this Order becomes effective.

These requirements shall be construed in light of the Regulation.

Parameter	Parameter Limits					Monitoring Requirements	
	Quantity Average	Quantity Maximum	Concentration Minimum	Concentration Average	Concentration Maximum	Sample Frequency	Sample Type
Ammonia, as N	n/a	n/a	n/a	NL	NL	1/W	4HC

APPENDIX A
SCHEDULE OF COMPLIANCE

Aqua Presidential, Inc. shall:

1. Upgrade/expand the existing Plant according to the following schedule:

   a. Complete Construction and submit a certificate to operate (CTO) application to DEQ, no later than October 31, 2015.

   b. After the issuance of the CTO and no later than December 15, 2015, start-up and transition operations form the existing WWTP to the new WWTP.

2. Complete the conversion of the old WWTP into the digester serving the new WWTP, no later than March 14, 2016.

3. The schedule referenced above shall include the submission of quarterly progress reports due on the 10th of the month following the end of the quarter. The first quarter shall begin with the first month after the effective date of this Order, until the completion of the upgrade/expansion of the Facility.

4. Operate and maintain the Facility in a workmanlike manner, in order to ensure that the Facility produces the best quality effluent of which it is capable.

Unless otherwise specified in this Order, Aqua Presidential, Inc. shall submit all reports required by Appendix A of this Order to:

Virginia Department of Environmental Quality
Attn: Enforcement Staff
13901 Crown Court
Woodbridge, VA 22193

APPENDIX B
INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

From the effective date of this Order until completion of the corrective action requirements contained in paragraph 1 of Appendix A, but in no event later than December 15, 2015, Aqua Presidential, Inc. shall monitor and limit the discharge from Outfall No. 001 of the Plant in accordance with VPDES Permit Number VA0086720, except as specified below. These interim limits shall retroactively apply, if applicable, as of the first day of the month in which this Order becomes effective.

These requirements shall be construed in light of the Regulation.

Parameter	Parameter Limits					Monitoring Requirements	
	Quantity Average	Quantity Maximum	Concentration Minimum	Concentration Average	Concentration Maximum	Sample Frequency	Sample Type
Ammonia, as N	n/a	n/a	n/a	NL	NL	1/W	4HC
BOD_5	4.7 kg/d	7.2 kg/d	n/a	25 mg/L	38 mg/L	1/W	4HC
TSS	5.7 kg/d	8.5 kg/d	n/a	30 mg/L	45 mg/L	1/W	4HC